

## Chapter 23 Roots, Stems, and Leaves

### Section 23–1 Specialized Tissues in Plants (pages 579–583)

*This section describes the principal organs and tissues of vascular plants. It also explains what specialized cells make up vascular tissue.*

#### Seed Plant Structure (pages 579–580)

1. What are the three principal organs of seed plants?  
 a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_
2. Circle the letter of each sentence that is true about a function that roots perform.
  - a. They anchor plants in the ground.
  - b. They compete with other plants for sunlight.
  - c. They absorb water and nutrients from soil.
  - d. They hold plants upright.
3. What does the transport system of stems do? \_\_\_\_\_  
 \_\_\_\_\_
4. The principal organs in which plants carry out photosynthesis are the \_\_\_\_\_.
5. What do the adjustable pores of leaves help conserve, and what do they allow to enter and leave a plant? \_\_\_\_\_  
 \_\_\_\_\_

#### Plant Tissue Systems (page 580)

6. What are the three tissue systems of plants?  
 a. \_\_\_\_\_ c. \_\_\_\_\_  
 b. \_\_\_\_\_

#### Dermal Tissue (page 580)

7. Dermal tissue typically consists of a single layer of \_\_\_\_\_.
8. What is the cuticle, and what is its function? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
9. What is the function of trichomes? \_\_\_\_\_
10. What does dermal tissue consist of in roots, and what is its function? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Vascular Tissue** (pages 580–581)

11. Complete the table about vascular tissue.

**TYPES OF VASCULAR TISSUE**

Type	Function	Cell Types Within Tissue
	Transports water	
	Transports food	

*Match the vascular-tissue cells with their descriptions.***Vascular-tissue Cells****Description**

\_\_\_\_\_ 12. Tracheids

**a.** The main phloem cells

\_\_\_\_\_ 13. Vessel elements

**b.** Long, narrow xylem cells with walls that are impermeable to water

\_\_\_\_\_ 14. Sieve tube elements

**c.** Phloem cells that surround sieve tube elements

\_\_\_\_\_ 15. Companion cells

**d.** Xylem cells arranged end to end on top of one another

16. How can water move from one tracheid into a neighboring cell? \_\_\_\_\_

\_\_\_\_\_

17. How can materials move from one sieve tube element into the next? \_\_\_\_\_

\_\_\_\_\_

18. What cells support the phloem cells? \_\_\_\_\_

**Ground Tissue** (page 582)

19. The cells that lie between dermal and vascular tissue make up what kind of tissue?

\_\_\_\_\_

20. Complete the table about ground-tissue cells.

**GROUND-TISSUE CELLS**

Type of Cell	Structure	Function
	Cells with thin cell walls and large central vacuoles	
	Cells with strong, flexible cell walls	
	Cells with extremely thick, rigid cell walls	

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

## **Plant Growth and Meristematic Tissue** (pages 582–583)

21. What do plants produce at their tips as long as they live? \_\_\_\_\_

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22. The only plant tissue that produces new cells by mitosis is called \_\_\_\_\_.

23. What occurs as meristematic cells mature? \_\_\_\_\_

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24. What is an apical meristem? \_\_\_\_\_

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25. Where else on many plants is there meristematic tissue other than at apical meristems?

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